



# Agenda

09:35 Introduction to Innovate UK & the GEM Programme

09:40 Civil Security – Home Office

09:45 Overview of Civil Security Mission

09:55 UK-Singapore Co-Innovation

10:00 Overview of Hatch, Singapore

10:15 Break (10 mins)

10:25 UK Experts Perspective

10:55 Panel Q&A Session

11:15 Next Steps

11:20 Thanks & Meeting Close

# Introduction to Innovate UK & the GEM Programme

**Nee-Joo Teh**

Head of Global Alliance, Innovate UK Business Connect



Innovate  
UK

The UK's innovation agency

# We are the UK's innovation agency

As part of UK Research and Innovation (UKRI), Innovate UK is publicly funded to drive innovation and productivity across the UK.

**We work for you to create a better future by inspiring, involving and investing in businesses developing life-changing innovations.**



A typical Innovate UK backed business raises

**>30%**

**more money**  
from the  
private sector



Than similar businesses. Since 2007

**Direct  
business  
benefit**



**£3.61**

**For every £1 invested**

Over a seven-year period. Based on the most recent independent evaluation.

# Our purpose

We drive **productivity and economic growth** by supporting businesses to develop and realise the potential of new ideas, including those from the UK's world-class research base.

We **connect businesses to the partners, customers and investors** that can help turn these ideas into commercially successful products and services, driving productivity, and supporting business growth.

**Our mission is to enable the creation and adoption of innovation across the UK.**

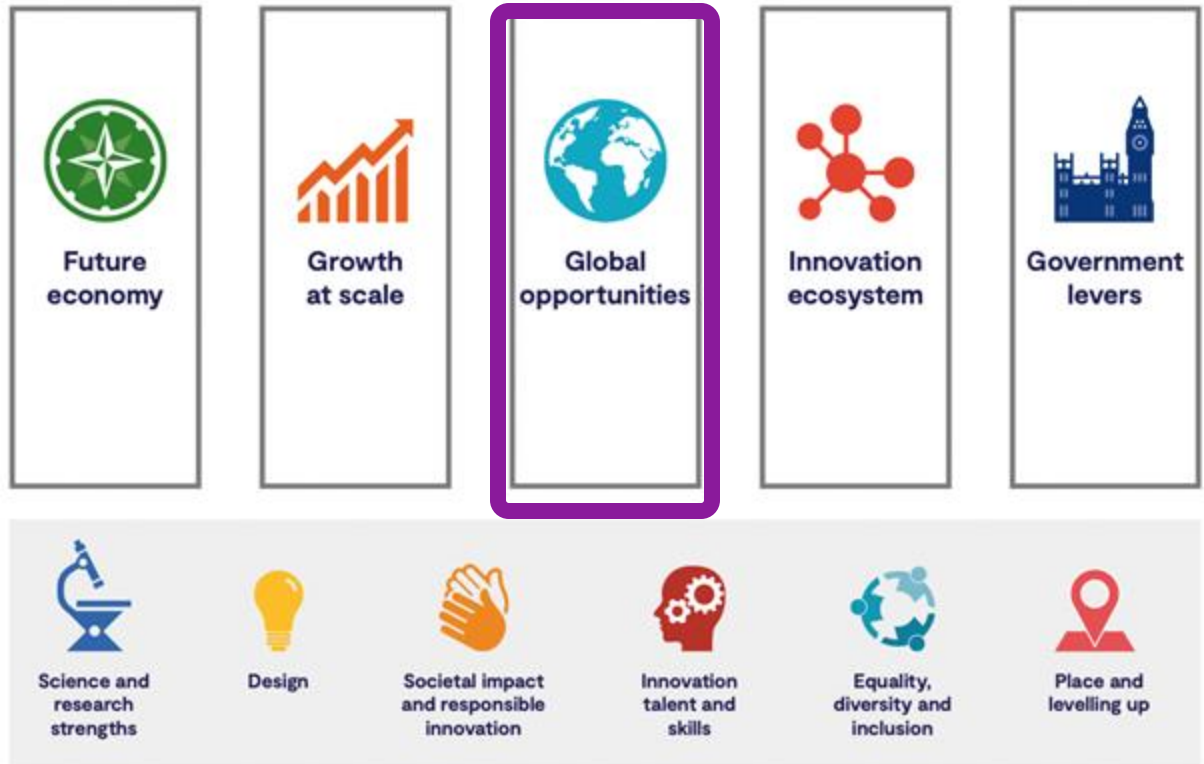


# Building the future economy

Plan for action for UK business innovation

inspire | involve | invest

2021–2025



## Theme 3: Global opportunities

More and more countries are looking to science and innovation to build their economies and meet global challenges. There is a major opportunity for international co-operation on research and development and innovation that builds on our world-class science and research capabilities and industry strengths.

# Innovate UK Global Tool Set

## Global Scoping Workshops (GSW)

These workshops bring together UK businesses, research organisations and other stakeholders in specific technology and sector areas to help identify countries offering the best prospects for partnership and collaboration with the UK.

The outputs of the workshop(s) will help to narrow down where Global Expert Missions could be used to scope opportunities in more detail.

## Global Expert Missions (GEM)

A group of 6-8 UK experts scopes the innovation opportunities for UK businesses in a specific tech area sector/challenge in a specific country, with the information gathered by the experts then disseminated to UK businesses.

- Three stages –
- Expert visit
  - Dissemination report
  - Dissemination workshop

## Global Business Innovation Programme (GBIP)

Cohort of c.15 innovative high growth businesses exploring opportunities and building collaborations and partnerships in specific countries and technology and sector areas.

- Programme over 9-12 months with 3 phases –
- Get ready
  - Visit the market
  - Exploit the opportunity

## Global Incubator Programme (GIP)

Cohort of c.6-8 innovative high growth businesses building long-term relationships and foundations for future market growth.

In Canada, USA, Singapore and India in specific technology and sector areas.

- Programme over 12-18 months with 4 phases
- Prepare
  - Participate
  - Pursue – 3-6 months in an incubator in country
  - Exploit

## Global Explorers

Funding to individual SMEs to help accelerate their growth and scaling through increasing global collaboration and future market access.

Aim is to support SMEs to:

- Explore and further international R&D and innovation collaboration and partnerships
- Engage effectively in collaborative research and innovation across borders
- Explore global market opportunities

Funding is available for up to 70% of eligible project activities, up to a maximum of £21,000.

## Bilateral and multilateral R&D + innovation funding programmes

Collaborative R&D grant funding to support projects involving UK businesses + researchers and overseas counterparts, often up to 36 months in specific technology and sector areas.

Enables partners to take forward the development of innovative products and services of relevance to the UK or partner countries involved.

Funding programmes can be bilateral or multilateral, such as through Eureka network.

Supporting access to Horizon Europe.



# GEM Objectives

## Building International Collaboration

- Gather key insights, build connection and produce evidence to inform and enhance partnerships with strategic economies across the globe

## Inform UK Business and Government

- Communicate sector specific insights to UK businesses and generate recommendations to Innovate UK and the UK Government to deliver collaborative partnerships with key countries

## Showcasing UK Capabilities

- Promote the UK's strengths in innovation and as the "Partner of Choice" for future collaborative partnerships

# Overview of Mission

**Andrew Stewart**

Knowledge Transfer Manager, Innovate UK Business Connect



Innovate  
UK

The UK's innovation agency



# Civil Security Mission

Mission Week: 1<sup>st</sup> to 5<sup>th</sup> April 2024

Mission coincided with **TechXSummit**

Supported by **UK Home Office** and **National Police Chiefs Council (NPCC)**

Experts

University of Edinburgh

CameraForensics

Logically

Faculty

The Home Office

The Metropolitan Police



# Mission Scope

Scope: Civil security implications of Generative AI including:

- Text & Images
- Chatbots
- Voice Cloning
- Deepfake videos

Methods:

- Volume – amplify fraudsters ability to reach potential victims at greater speed & scale
- Sophistication – create more convincing and personalised content



# Threat of GenAI Content

- **Misinformation & disinformation** considered to be one of the **most severe global risks** – Global Risks Report 2024, World Economic Forum
- **Public Exposure to ‘chilling’ AI child abuse images and videos increasing** – Internet Watch Foundation (18<sup>th</sup> October 2024)
- **Generative AI could cause significant harm to UK’s national security in unintended ways** – Centre for Emerging Technology and Security (CETaS) at The Alan Turing Institute

# Malicious Generative AI Use Cases

- Digital Security
  - Cyber security
  - Targeting and Fraud
  - Abuse material
- Political Security
  - Political disinformation & electoral interference
  - Surveillance, monitoring and geopolitical fragmentation
- Physical Security
  - Radicalisation and Terrorism

# Smart Nation 2.0

A Thriving Digital Future For All

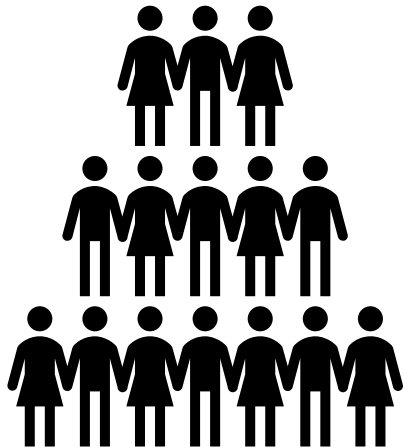


## Why Singapore?

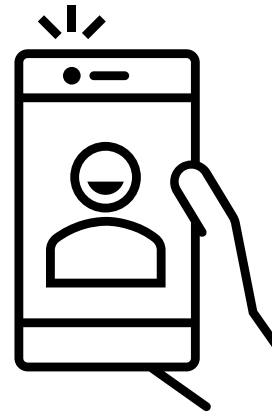
- Singapore is **ranked 3<sup>rd</sup>** in the Global AI Index behind the U.S. (1<sup>st</sup>) and China (2<sup>nd</sup>)
- Strong digital sector backed by government initiatives such as **Smart Nation Singapore** and a **Nation AI Strategy**.
- Singapore's **Home Team Science & Technology Agency (HTX)** plays a unique role in enhancing homeland security through technology and innovation
- Singapore's vision is to be a global leader in the development and deployment of AI and in **the governance of AI systems**.

# TechXSummit

- The delegation attended TechXSummit – HTX’s international conference and exhibition on Homeland Security Science and Technology.
- The summit brings together government officials, industry leaders and academics to discuss the latest challenges in civil security.
- This year’s conference theme was **Powering Innovation: A Safe and Secure Future.**



Over 11,600  
attendees from  
75 countries



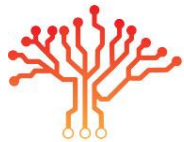
307 exhibitors  
showcasing their  
technologies across  
5 zones.

# Singapore Stakeholders

R&D



NANYANG  
TECHNOLOGICAL  
UNIVERSITY  
SINGAPORE



AI SINGAPORE

Government, Funders & Accelerators



HTX



SGINNOVATE



HATCH



CATOS

Commercial



KLASS



NCS



UKRI  
Innovate  
UK

# Key Insights

- There is a nascent but growing ecosystem of start-ups emerging in Singapore nurtured by HTX to address the challenges presented by GenAI
- Strong *'think AI first'* ethos across government and the public sector and a drive to deploy AI systems
- Well-funded programmes to advance AI governance and public trust in AI Systems
- A commitment to ensuring technology such as LLMs are adapted and fit-for-purpose for the languages, cultures and values of Southeast Asia
- An openness and appetite to work and collaborate with international partners



# UK-Singapore Co-Innovation

**David Campbell-Molloy**

Partnership Manager – Asia, Innovate UK



Innovate  
UK

The UK's innovation agency

# New UK-Singapore Agreement 2024-27

- Agreement between Innovate UK and Enterprise Singapore
- Builds upon previous bilateral agreement
- Sets out series of joint activities to deepen innovation relationship
- Digital technologies added as an area of future cooperation
- Both UK & Singapore rank highly in Global Innovation Index (WIPO)



# Previous Collaboration 2021-24

- Provided 3-year framework for innovation cooperation
- 4 bilateral CRD Calls delivered supporting 42 joint projects
- Assisted over 150 UK SMEs to explore opportunities with Singapore through our global programmes
- £30m IUK investment in relationship with Singapore



# Hatch

## Wilson Ng

Senior Manager, Innovations Partnerships, Home Team  
Science and Technology Agency (HTX)



Innovate  
UK

The UK's innovation agency

A large, stylized graphic element consisting of two thick, magenta-colored brackets that frame the text below. The background of the entire slide is a futuristic, high-tech scene with a person's hand interacting with a transparent digital interface. The interface displays various icons and text labels. In the background, there is a blurred image of a public space with people walking, overlaid with a grid and glowing blue lines. On the left, a globe is visible, and on the right, a vertical list of icons is shown. The overall color palette is dominated by dark blues, teals, and magentas, with bright blue highlights and glowing effects.

# MISSION TO INNOVATE.

Advancing public security  
through accelerating dual-use  
technologies for mission impact

Established by:



Powered by:



Global Partner:



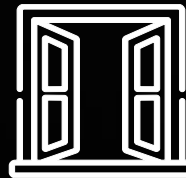
# MISSION TO INNOVATE

Hatch is an innovation centre driven by the mission to curate and accelerate dual-use technologies that enhance public safety and security.

Established by the Home Team Science & Technology Agency (HTX) under Singapore's Ministry of Home Affairs, we are dedicated to leveraging cutting-edge global technologies across multiple sectors to achieve this critical mission.



Established on 30 May 2023 by HTX, in collaboration with **Knovel Engineering** and **SOSA**.



A government programme office under HTX Partnerships that **works across Singapore's Home Team**.



Operational end-users in public safety & security validate **technologies from start-ups globally**.

At Hatch, we drive innovation by fast-tracking proofs-of-concept, catalysing collaborations, and validating solutions through real-world use-cases with real-life end-users from Singapore's Home Team.

We drive breakthroughs and bold innovations to make Singapore and global communities safe and secure.

# Singapore's Home Team

Building a safer and more secure Singapore

Singapore Police Force

Yellow Ribbon Singapore

Internal Security Department

Gambling Regulatory Authority

Singapore Civil Defence Force

Home Team Science & Tech Agency

(HTX)

Immigration & Checkpoints Authority

Home Team Academy

Singapore Prison Services

Central Narcotics Bureau



# Hatch's Programmes

Bringing global start-up technologies into Singapore's Home Team

## Key Programmes:




### Hatch & Match

Evergreen global technologies scouting and curation



### Dimension X

Twice-yearly open innovation challenge

Supported by:  Microsoft

## Main features:



Challenge statements based on actual Home Team use-cases



Co-develop solution with end users and S&T experts



Effective networking with industry partners and investors in Asia's top financial hub



Fast-tracked pathways to tangible POCs and projects



# Our Innovation Process

The DNA of Hatch

## 1. Analyse

Define challenge statements with end-users based on actual use-cases



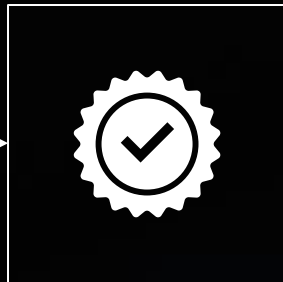
## 2. Scout

Targeted global scouting through network-of-networks



## 3. Meet

Facilitate meetings between start-ups, end-users, and HTX S&T experts



## 4. Validate

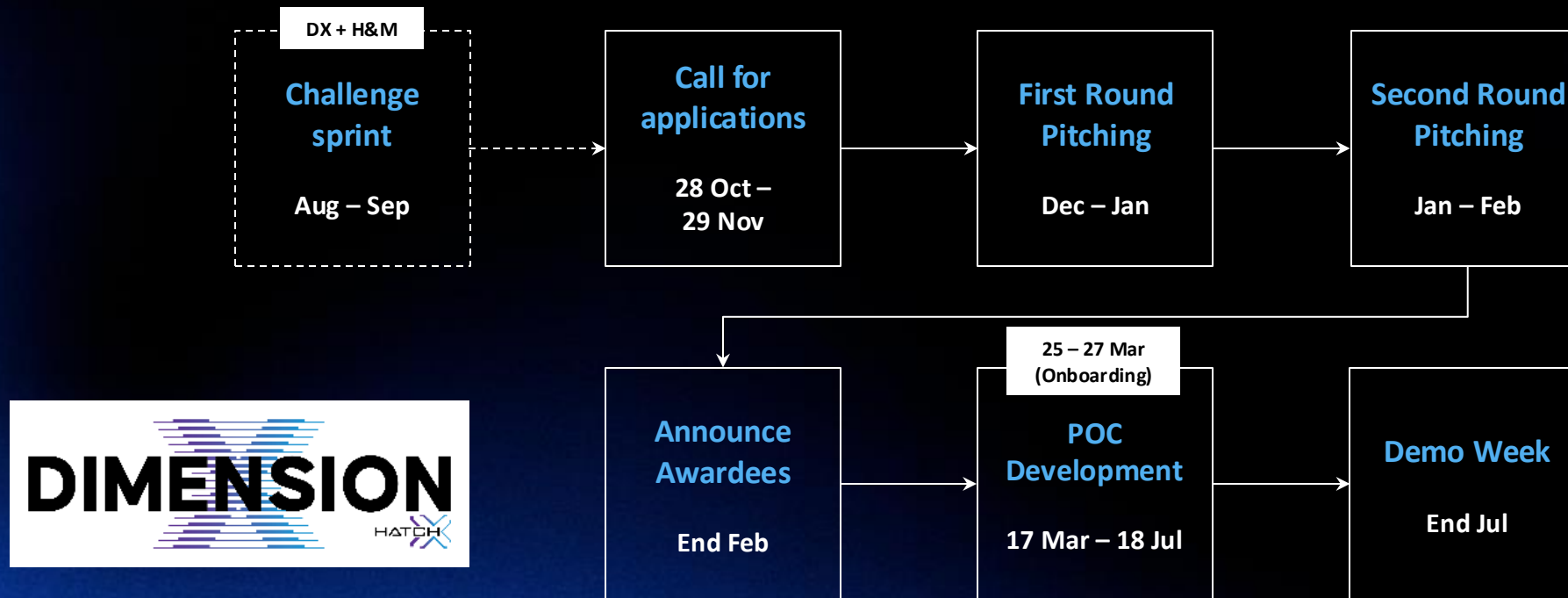
Validation of POC in end-user selected operating environment

# Dimension X (DX) – Programme Details

Establishing HTX reach to advanced technologies through global open calls



## DX Timeline (Cohort 5)



# Dimension X (DX) – Programme Reach

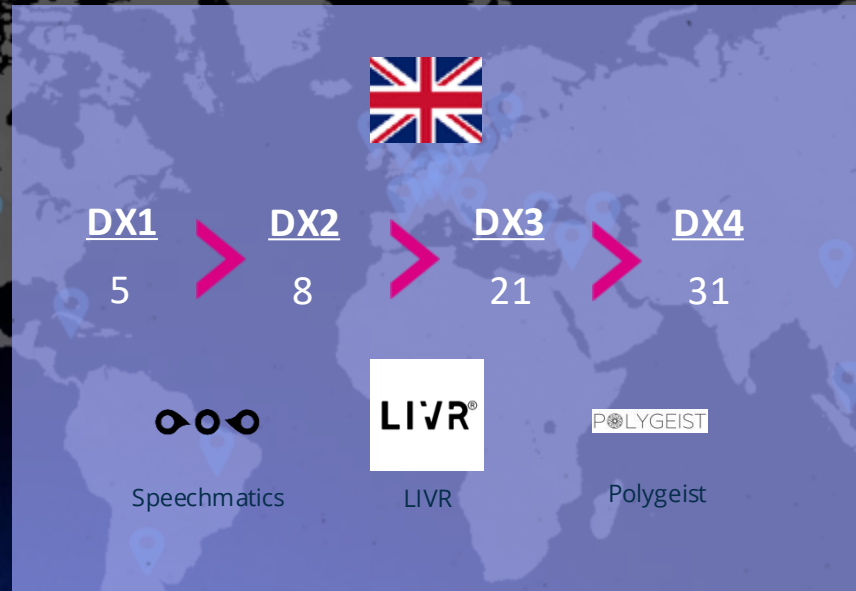
Establishing HTX reach to advanced technologies through global open calls



Tel Aviv



Silicon Valley



Hong Kong



UK

# Dimension X Cohort 5 – Tech Domain Areas

## AI R&D

### Language AI

- a. Conversational AI
- b. AI-enabled speech tasks
- c. Acoustic analysis
- d. Spoken & written language understanding, reasoning & generation
- e. Document parsing & retrieval

### Vision AI

- a. AI-enabled image/video processing
- b. AI for deepfake detection
- c. Development of non-trusive methods for Explainable AI for Deep Neural Network
- d. Multi-modal agentic AI

### Multi-Modal AI

- a. Large Multi-modal Model (LMM) pre-training, finetuning, bench-marking
- b. Real Time LMMs
- c. Tiny LMMs

### Embodied AI

- a. AI enhanced robotic navigation, manipulation
- b. Modelling and simulation tools for development & testing

### Emerging AI

- a. Quantum algorithms (e.g. tensor networks for anomaly detection)
- b. AI models for physical sciences
- c. Physics-inspired AI models with realistic predictions

### Adversarial AI

- a. Adversary engagement tools for IoT to identify attacks and generate info
- b. AI-powered IoT honeypots for detection and analysis

## AI Enablers

### Data Management

- a. Robust data management systems and appropriate data for relevant, high-quality data that fuels AI models

### GPU Compute

- a. High-performance compute capabilities with cutting-edge GPU technology

### Platform & Tools

- a. Streamlined DevSecOps and MLOps pipelines, robust security controls for secure, reliable, and scalable AI systems

# Dimension X (DX) – Demo Day

Platforms to showcase our collaborations and innovations with start-ups!

Next Demo Week:  
End Feb 2025



On-site demos / Pitch Day to the Home Team

Pitch Day to the wider industry and immersion in global safety & security market

# Hatch Events

Engagements to help connect Home Team end-users with the innovation ecosystem

Spotlight Series



Ecosystem Engagements



Home Team Engagements



CNA's The Big Spark S1 (View [here!](#))



# Thank You

Push the boundaries with your technology  
by joining Hatch's Dimension X programme!



Established by:



Powered by:



Global Partner:



# Hatch

## Wilson Ng

Senior Manager, Innovations Partnerships, Home Team  
Science and Technology Agency (HTX)



Innovate  
UK

The UK's innovation agency





# MISSION TO INNOVATE.

Advancing public security through accelerating dual-use technologies for mission impact

MANAGEMENT

SOLUTION

ANALYSIS

INNOVATION

STRATEGY

SUCCESS

IDEAS

SUPPORT

Established by:



Powered by:



Global Partner:



# MISSION TO INNOVATE

Hatch is an innovation centre driven by the mission to curate and accelerate dual-use technologies that enhance public safety and security.

Established by the Home Team Science & Technology Agency (HTX) under Singapore's Ministry of Home Affairs, we are dedicated to leveraging cutting-edge global technologies across multiple sectors to achieve this critical mission.

At Hatch, we drive innovation by fast-tracking proofs-of-concept, catalysing collaborations, and validating solutions through real-world use-cases with real-life end-users from Singapore's Home Team.

We drive breakthroughs and bold innovations to make Singapore and global communities safe and secure.



Established on 30 May 2023 by HTX, in collaboration with **Knovel Engineering** and **SOSA**.



A government programme office under HTX Partnerships that **works across Singapore's Home Team**.



Operational end-users in public safety & security validate **technologies from start-ups globally**.

# Singapore's Home Team

Building a safer and more secure Singapore

Singapore Police Force

Yellow Ribbon Singapore

Internal Security Department

Gambling Regulatory Authority

Singapore Civil Defence Force

Home Team Science & Tech Agency

(HTX)

Immigration & Checkpoints Authority

Home Team Academy

Singapore Prison Services

Central Narcotics Bureau



# Hatch's Programmes

Bringing global start-up technologies into Singapore's Home Team

## Key Programmes:




### Hatch & Match

Evergreen global technologies scouting and curation



### Dimension X

Twice-yearly open innovation challenge

Supported by:  Microsoft

## Main features:



Challenge statements based on actual Home Team use-cases



Co-develop solution with end users and S&T experts



Effective networking with industry partners and investors in Asia's top financial hub



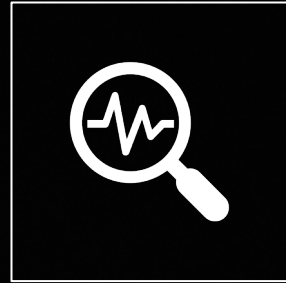
Fast-tracked pathways to tangible POCs and projects

# Our Innovation Process

The DNA of Hatch

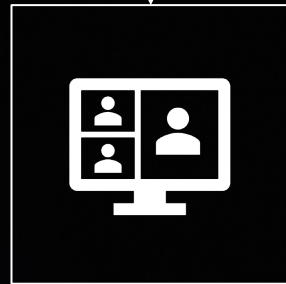
## 1. Analyse

Define challenge statements with end-users based on actual use-cases



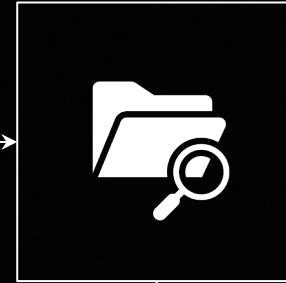
## 3. Meet

Facilitate meetings between start-ups, end-users, and HTX S&T experts



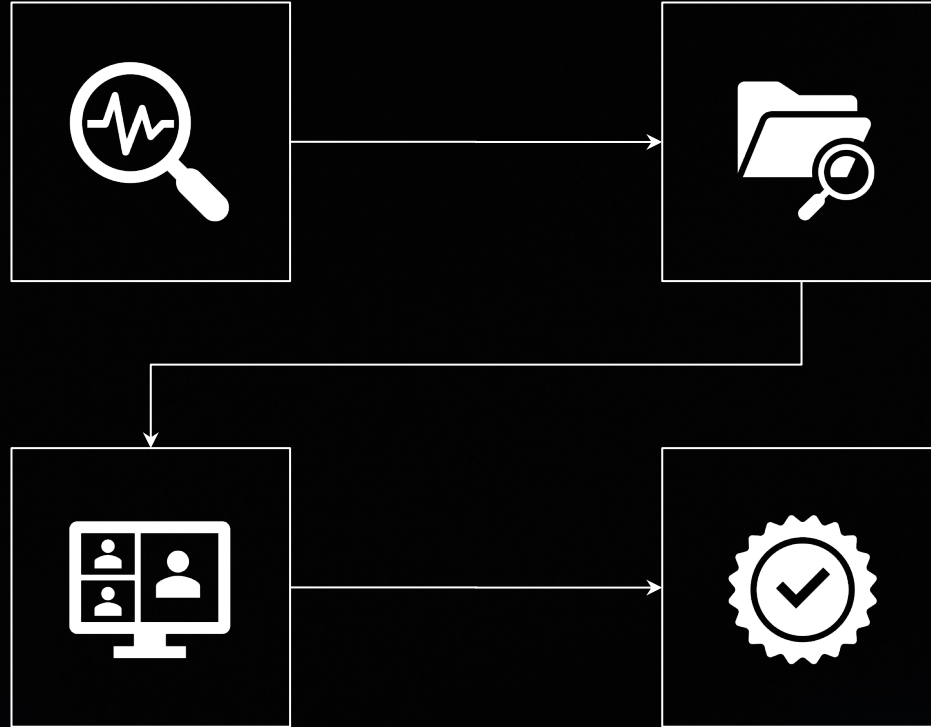
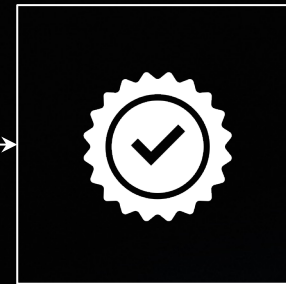
## 2. Scout

Targeted global scouting through network-of-networks



## 4. Validate

Validation of POC in end-user selected operating environment

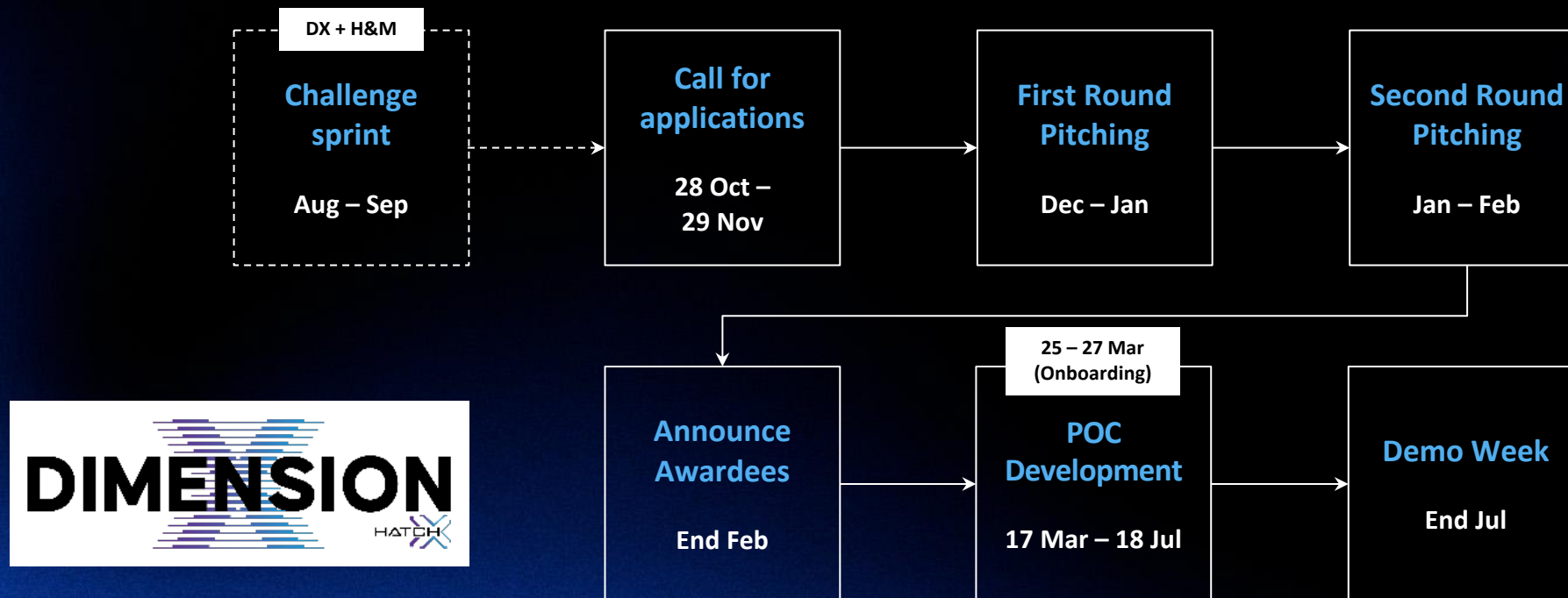


# Dimension X (DX) – Programme Details

Establishing HTX reach to advanced technologies through global open calls



## DX Timeline (Cohort 5)



# Dimension X (DX) – Programme Reach

Establishing HTX reach to advanced technologies through global open calls

					
32 challenge statements	5 open calls	500+ applications	31 places of origin	21 POCs completed	11 POCs in pipeline



Tel Aviv



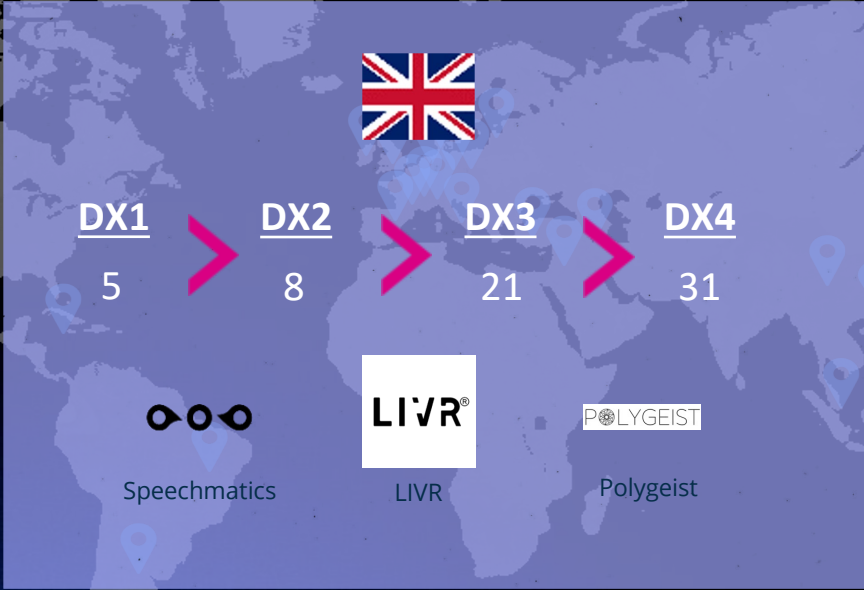
Silicon Valley



Hong Kong



UK



# Dimension X Cohort 5 – Tech Domain Areas

## AI R&D

### Language AI

- a. Conversational AI
- b. AI-enabled speech tasks
- c. Acoustic analysis
- d. Spoken & written language understanding, reasoning & generation
- e. Document parsing & retrieval

### Vision AI

- a. AI-enabled image/video processing
- b. AI for deepfake detection
- c. Development of non-trusive methods for Explainable AI for Deep Neural Network
- d. Multi-modal agentic AI

### Multi-Modal AI

- a. Large Multi-modal Model (LMM) pre-training, finetuning, bench-marking
- b. Real Time LMMs
- c. Tiny LMMs

### Embodied AI

- a. AI enhanced robotic navigation, manipulation
- b. Modelling and simulation tools for development & testing

### Emerging AI

- a. Quantum algorithms (e.g. tensor networks for anomaly detection)
- b. AI models for physical sciences
- c. Physics-inspired AI models with realistic predictions

### Adversarial AI

- a. Adversary engagement tools for IoT to identify attacks and generate info
- b. AI-powered IoT honeypots for detection and analysis

## AI Enablers

### Data Management

- a. Robust data management systems and appropriate data for relevant, high-quality data that fuels AI models

### GPU Compute

- a. High-performance compute capabilities with cutting-edge GPU technology

### Platform & Tools

- a. Streamlined DevSecOps and MLOps pipelines, robust security controls for secure, reliable, and scalable AI systems



# Dimension X (DX) – Demo Day

Platforms to showcase our collaborations and innovations with start-ups!

Next Demo Week:  
End Feb 2025



On-site demos / Pitch Day to the Home Team

Pitch Day to the wider industry and immersion in global safety & security market

# Hatch Events

Engagements to help connect Home Team end-users with the innovation ecosystem

Spotlight Series



Ecosystem Engagements



Home Team Engagements



CNA's The Big Spark S1 (View [here!](#))



# Thank You

Push the boundaries with your technology  
by joining Hatch's Dimension X programme!



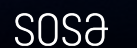
Established by:



Powered by:



Global Partner:



# UK Experts

**Alan Gould**, CameraForensics

**Beth Lambert**, Logically

**Prof Helen Hastie**, University of Edinburgh

**Nijma Khan**, Faculty

**Andrew Tyeloo**, The Home Office



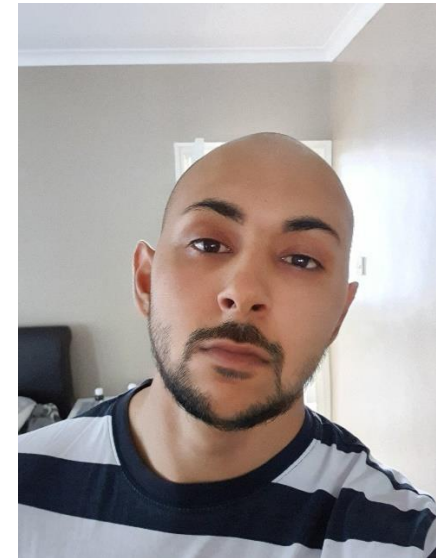
Innovate  
UK

The UK's innovation agency

# Andrew Tyeloo

Head of Data Science & AI R&D Programme, The Home Office

<https://www.gov.uk/government/organisations/home-office>



# Alan Gould

Operations Manager, CameraForensics

<https://www.cameraforensics.com/>



# Beth Lambert

Account Director, Logically

<https://logically.com/>



# Professor Helen Hastie

Head of School of Informatics, University of Edinburgh

<https://www.ed.ac.uk/>





# Nijma Khan

Director, Government, Faculty

<https://faculty.ai/>



# Next Steps

**Zale Johnson**

National Contact Point, Civil Security, Innovate UK



Innovate  
UK

The UK's innovation agency

# UK – Singapore Alliance

## Recent History

- UK-Singapore Free Trade Agreement: February 2021
- Strategic Partnership: September 2023
- Enhance security and economic co-operation
- Harness joint expertise and interests in new technologies e.g. cyber and AI

## For GEN AI and Deepfake Detection, both the UK and Singapore have:

- set these out as priorities
- the desire to be global leaders
- the ambition to undertake more R&I
- similar challenges and concerns

# Next steps for Future Collaboration

➤ Foundations have been built but lots of work to be done

## INPUT: COLLABORATION FOR GEN AI RESEARCH AND INNOVATION

SHORT TERM (6-9 months)	MEDIUM TERM (9 – 12 months)	LONG TERM (12 months+)
Constructive Conversations	Plan activities	Technological impact
Identify similarities/differences	How? Where? Who? What? When?	Scientific impact
Mutual challenges	Expected outcomes/deliverables	Societal impact
Funding	Methodologies	Economic impact
Customer requirements	Key objectives	Exploitation & Implementation

## OUTPUT: FIT FOR PURPOSE, STATE OF THE ART SOLUTIONS

# Mission Report

[Mission report](#)

<https://iuk-business-connect.org.uk/projects/global-expert-missions/civil-security-in-singapore-2024-report/>



## Innovate UK Global Expert Mission Report

Civil Security, Singapore

April 2024

